IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Appellant: Lester F. LUDWIG

Serial No.: 10/702,415

Filed: November 6, 2003

Title: SIGNAL PROCESSING FOR TWANG AND RESONANCE

Group Art Unit: 2837

Examiner: Marlon T. Fletcher

Confirmation No. 8353

Attorney Docket No.: 92046-8727 [2152-3030]
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Certificate of Transmission/Mailing

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August 8, 2008   /Jeffrey J. Lotspeich/
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APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P. O. Box 1450
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Sir:

This brief is in furtherance of the Notice of Appeal filed concurrently herewith, and is submitted responsive to the second Office Action issued May 12, 2008. Payment via credit card for the statutory fee for an appeal brief in the amount of $255.00 is also submitted herewith. Accordingly, Appellant submits the following:

I. REAL PARTIES IN INTEREST

The real party in interest in this mater is the sole inventor, Lester F. Ludwig (hereinafter "Appellant").

II. RELATED APPEALS AND INTERFERENCES

Currently, there are six other related appeals which have been filed. These appeals have been filed in the following applications:

Docket No.	App. Ser. No.:	App. filing date:	Appeal filed:
2152-3005	09/812,400	March 19, 2001	January 25, 2007
2152-3014	10/676,926	September 30, 2003	January 31, 2008
2152-3023	10/680,591	October 6, 2003	January 31, 2008
2152-3027	10/702,262	November 5, 2003	January 29, 2007* & March 12, 2008
2152-3026	10/703,023	November 5, 2003	July 25, 2006
2152-3044	11/040,163	January 21, 2005	January 31, 2008

With regard to Ser. No. 10/702,262 (Atty. Doc. No. 2152-3027), the Examiner has recently reopened prosecution by issuing an Office Action on December 10, 2007. On review of this Office Action, it is believed that the Examiner has improperly reopened prosecution as being in violation of the requirements of MPEP § 1207.04 since, *inter alia*, the Examiner failed to obtain the necessary approval from his supervisory patent examiner.[1] Notwithstanding the improper reopening of prosecution in that case, since the Examiner has, in all relevant parts, simply reformulated the same rejections, Appellant has filed a second Notice of Appeal in the '262 application on March 12, 2008.

Appellant notes further that there are approximately five additional pending applications containing substantially the same disclosure as the above-identified applications, and which are assigned to the same Examiner as the present application and the above-mentioned applications. Appellant anticipates that each of the five pending applications, which if rejected, will also require additional appeals to the Board of Appeals and Interferences. Appellant will endeavor to update this section of the present Appeal Brief when necessary to reflect the current status of such related appeals.

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1 The examiner may, with approval from the supervisory patent examiner, reopen prosecution to enter a new ground of rejection after appellant's brief or reply brief has been filed. MPEP 1207.04

III. STATUS OF CLAIMS

Claims 1-50 are all the claims pending in the application. Claims 1, 2, 4, 7-9, 11-27, 29, 32-34, 32-34, and 36-50 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Levine (5,848,164) in view of Okamura (5,652,797). Claims 3, 5, 6, 10, 28, 30-31, and 35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Levine in view of Okamura, and further in view of Gerzon (5,555,306). The appeal is directed to the rejection to claims 1-50. A copy of the rejected claims appears in the Appendix of Claims on Appeal attached to the Appeal Brief.

IV. STATUS OF AMENDMENTS

No amendment has been filed subsequent to the final rejection recited in the Office Action of May 12, 2008.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Briefly, with regard to independent claim 1, aspects of the present claim provides a method for enriching timbre of audio signals by adding swelling resonance, twang, or both. The system includes an incoming audio signal (element 3900 in Figure 3, page 106 line 3) and a plurality of audio signal delays, wherein each delay of the plurality of audio signal delays receive signal inputs comprising the incoming audio signal and a distinct high resonance positive feedback signal (elements 3901.1 – 3901.n in Figure 3, page 105 lines 17-20, page 106 lines 3-4), and includes a distinct selectable delay time corresponding to a period of a desired resonant frequency (*ibid*., also page 106 lines 9-11), wherein each delay of the plurality of audio signal delays combine the received signal inputs resulting in a combined signal (element 3905a-b and signals 3906a-b in Figure 3, page 106 lines 6-8). When signals reach a predetermined threshold, distortion is introduced (page 105 lines 19-21). As a result, each delay of the plurality of audio signal delays generates an outgoing signal (outputs on the right sides of each of elements 3901.1 – 3901.n in Figure 3, page 105 line 23 "following," page 106 line 4 "followed") according to the selectable delay time (page 106 lines 3-4 and lines 9-11), such that the outgoing signal comprises the combined signal and any distortion that has been introduced (evident from the signal flows from the right side output of each of elements 3901.1 – 3901.n propagating forward through subsequent enhancement by flanging, chorus, and autopanning signal processing to form combined stereo signal 3906a-b via stereo mixer 3905a-b in Figure 3, page 105 line 19 through page 106 line 8).

With regard to claim 26, a method for enriching timbre of audio signals by adding swelling resonance, twang, or both includes receiving an incoming audio signal at each delay of a plurality of audio signal delays signal (element 3900 in Figure 3, page 106 line 3). Operations include receiving a distinct high resonance positive feedback signal at each delay of the plurality of audio signal delays (elements 3901.1 – 3901.n in Figure 3, page 105 lines 17-20, page 106 lines 3-4), wherein each individual delay of the plurality of audio signal delays includes a distinct selectable delay time corresponding to a period of a desired resonant frequency (*ibid*., also page 106 lines 9-11), and generating a combined signal for each delay of the plurality of audio signal delays by combining the incoming audio signal and the high resonance positive feedback signal associated with an individual delay of the plurality of audio signal delays, wherein the generating is performed for each

delay of the plurality of audio signal delays to generate a corresponding plurality of combined signals (element 3905a-b and signals 3906a-b in Figure 3, page 106 lines 6-8). Further operations include introducing distortion (page 105 lines 19-21) into a particular combined signal of the plurality of combined signals after the particular combined signal reaches a predetermined threshold, wherein the introducing is performed for each delay of the plurality of audio signal delays, and providing an outgoing signal (outputs on the right sides of each of elements 3901.1 – 3901.n in Figure 3, page 105 line 23 “following,” page 106 line 4 “followed”) from each delay of the plurality of audio signal delay according to the selectable delay time, wherein the outgoing signal comprises the combined signal and any distortion that has been introduced (evident from the signal flows from the right side output of each of elements 3901.1 – 3901.n propagating forward through subsequent enhancement by flanging, chorus, and autopanning signal processing to form combined stereo signal 3906a-b via stereo mixer 3905a-b in Figure 3, page 105 line 19 through page 106 line 8).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 2, 4, 7-9, 11-27, 29, 32-34, 32-34, and 36-50 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Levine (5,848,164) in view of Okamura (5,652,797). Claims 3, 5, 6, 10, 28, 30-31, and 35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Levine in view of Okamura, and further in view of Gerzon (5,555,306).

VII. ARGUMENT

A. Rejection under 35 U.S.C. §103(a)

Claims 1, 2, 4, 7-9, 11-27, 29, 32-34, 32-34, and 36-50 2-18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Levine (5,848,164) in view of Okamura (5,652,797). Claims 1 and 26 are the only independent claims.

Appellant seeks review and reversal of the rejection to claim 1 based upon three separate errors. First, the Examiner has failed to comply with MPEP § 707.07(f) by not addressing the substance of Appellant's traversal of the claim rejections. Second, Appellant's last Response of 1/15/2008 identified at least four distinctions between claim 1 and the cited Levine and Okamura patents. (Response of 1/15/2008, pgs. 10-14). Any one of the four distinctions unambiguously define claim 1 over the reference relied upon by the Examiner, yet the Examiner improperly maintains the rejection. Third, the Examiner has failed to comply with MPEP 707 by not specifically referring to the particular portion of the Okamura patent that purportedly provides teachings relating to "after said combined signal reaches a predetermined threshold," as required by claim 1. Each of these three errors for which Appellant seeks review will now be presented in more detail.

A.1 Examiner fails to address Appellant's arguments

A first error with regard to the rejection to claim 1 relates to Appellant's last Response of 1/15/2008 that identified at least four distinctions between claim 1 and the cited Levine and Okamura patents. (Response of 1/15/2008, pgs. 10-14). In the latest Office Action of 5/12/2008, the Examiner maintains the rejection without providing <u>any</u> substantive comments to any of the points raised by Appellant. For instance, the Examiner's response to Appellant's arguments of 1/15/2008 are reproduced as follows:

Response to Arguments

Applicant's arguments filed 1/15/2008 have been fully considered but they are not persuasive. Applicant's argument has been reviewed. The arguments are not convincing. The applicant argues the selectable delay. It is believed that the claim limitations regarding this issue are met by the references. As for the IDS. No reference that lacks a publication date, will be consider. The IDS can not be processed with out this information. If applicant provides the dates where missing, the IDS will be considered. This should have been clear by the remarks "no date" on the IDS where initials were not provided. The rejection remains.

Examiner's Response, OA 5/12/08, pg. 5

Appellant has underlined the relevant portion of the Examiner's comments. The Examiner simply acknowledges Appellant's "selectable delay" position but does not consider or answer the substance of Appellant arguments. This is concerning since Appellant's comments identify at least four clear distinctions between the claims and the Levine and Okamura patents. The first error for which review and reversal of the current rejection is believed warranted and relates to the Examiner's failure to comply with MPEP § 707.07(f), which provides:

> "In order to provide a complete application file history and to enhance the clarity of the prosecution history record, an examiner must provide clear explanations of all actions taken by the examiner during prosecution of an application.
>
> Where the requirements are traversed, or suspension thereof requested, the examiner should make proper reference thereto in his or her action on the amendment.
>
> Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and <u>answer the substance</u> of it." (emphasis added).

As evidenced by the forgoing Response to Arguments, the sparse comments provided by the Examiner clearly do not "answer the substance" of the detailed arguments presented by Appellant in the latest Response. (Response of 1/15/2008, pgs. 10-14). Reversal of the rejection is believed merited and proper, and is respectfully requested.

A.2 Cited references are clearly deficient

A second error regarding claim 1 also relates to Appellant's last Response of 1/15/2008, that identified at least four distinctions between claim 1 and the cited Levine and Okamura patents. (Response of 1/15/2008, pgs. 10-14). The error is that the Examiner improperly maintains the rejection even though any one of the four distinctions set out by the Appellant clearly define claim 1 over the reference relied upon by the Examiner. As such, even if one of ordinary skill in the art were to combine Levine and Okamura in the manner alleged by the Examiner, claim 1 would be patentable since all of the recited claim elements are not taught or reasonably suggested. Each of these four distinctions is set out in the following Sections A.3-A.6. These distinctions are the same, in all relevant parts, to the arguments submitted in Appellant's last response of 1/15/2008.

A.3 Levine does not teach a plurality of audio signal delays receiving the incoming audio signal and high resonance positive feedback signal

Claim 1 is directed toward a system for enriching timbre of audio signals and recites "a plurality of audio signal delays, wherein <u>each delay</u> of said plurality of audio signal delays receive signal inputs comprising <u>said incoming audio signal</u> and a distinct high resonance positive feedback signal." Page 3 of the Office Action of 5/12/2008 indicates that the delay line length elements 401 and (501-1) – (501-3) of Levine, as shown in Figs. 3 and 4, disclose the just-identified claim elements.

Examining first the general operation of the Levine system, it is noted that Levine discloses an MPEG Analysis Filter Bank 138 splitting an incoming audio signal 140 into thirty-two separate and distinct frequency-band-partitioned subband signals (116-1 through 116-32), and separately directing each of these (thirty-two) separate signals to an associated separate customized effects filter (128-1 through 128-32). Each of the thirty-two subband signals (116-1 through 116-32) has entirely different frequency content from the others. This point is made explicit by Levine:

> "The analysis filter bank is responsible for compressing, encoding and splitting the fullband fullrate audio input signal into subbands of critically sampled compressed audio data 116. <u>Each subband carries critically sampled</u>

> data for a distinct frequency range, with the 32 subbands covering the frequency range 0 to 22.05 kHz. (i.e., each subband carries data for a frequency range of about 689 Hz.). If other sampling frequencies Fs are used, the frequency range of each subband will be Fs /32." (Levine col. 3 lines 40-49) (emphasis added).

The Examiner alleges that the claimed "audio signal delays" is met by Levine's elements 401 (Figure 4) and 501-1 through 501-3 (Figure 5). (Office Action of 5/12/2008, pg. 2). These elements, and the rest of the associated configurations depicted in Figures 4 and 5, are in fact the thirty-two separate customized effects filters (128-1 through 128-32) (Figure 2). Thus, each of the Levine delays do not receive the incoming audio signal 140, but rather receive a distinct separate processed signal (116-1 through 116-32), each having an entirely different frequency. Figure 2 of Levine clearly shows this aspect.

The distinction is that claim 1 requires that "each delay" receive the same incoming audio signal (i.e., "said incoming audio signal"), whereas Levine relates to receiving different signals (subbands 116-1 through 116-32) at each delay. Accordingly, Levine fails to teach or suggest the "plurality of audio signal delays" as claimed in claim 1.

Appellant recognizes that claim 1 does not explicitly recite the phrase "same incoming audio signal." However, this aspect is inherent in that claim 1 recites the phrase "said incoming audio signal," which is a signal (i.e., the same signal) that is received at each of the plurality of audio signal delays.

The Examiner never commented on this clear distinction between claim 1 and the cited Levine patent.

Additionally, the Examiner states that Levine gain element 402 provides high resonance positive feedback to each of the delay elements 401 and 501-1 through 501-3. This, too, is incorrect. The filter models of Figures 4 and 5 are separate mutually exclusive structures with no internal cross connections among their elements (See Levine column 3 lines 59-65). Thus Levine gain element 402 cannot apply to delay elements 501-1 through 501-3. Yet further, there is no positive feedback structure anywhere in the filter of Figure 5, only a feedforward path involving feedforward gain element 502 and the depicted output mixer. A feedback path would require an input summer of a mixer such as that receiving the output from feedback gain element 402 in Figure 4.

A.4 Levine does not teach "selectable delay time corresponding to a period of a desired resonant frequency"

Claim 1 further recites "wherein each delay . . . a distinct selectable delay time corresponding to a period of a desired resonant frequency." The portion of Levine relied upon by the Examiner is as follows:

> "As shown in FIGS. 3, 4, 5, and 6A-6C, the parameters that can be customized for each of the selected prototype subband effects filter include a delay line length 301, 401, 501-1,2,3, 601-1,2, one or more feedback scalars 302, 402, and one or more feedforward scalars 403, 502, 602. For example, if the sound system designer wants to create a customized subband flange effect, the designer executes the filter customization procedure and selects the prototype subband flange effects filter shown in FIG. 4.
>
> The sound system designer can then adjust the feedforward <u>gain scalar</u> 403, the <u>feedback gain scalar</u> 402, and the <u>delay length</u> 401 parameters to <u>produce a customized flange subband audio effect filter</u> as desired by the designer. The resultant customized subband effects filter can be saved in memory of the audio effects processing system 100. One or more customized subband effects filters can be grouped together to form a user defined group of customized subband effects filters 134 for processing the whole range of compressed audio subband data." (Levine col. 4, lines 13-30) (emphasis added).

The cited passage relates to (a) selecting a filter configuration (i.e., a choice of the configuration of Figure 4 rather than that of Figure 3); or (b) adjusting of the delay line length to produce a customized flange subband audio effect filter as desired by a designer. Regardless of the path taken, Levine provides a mechanism to produce a "customized <u>flange subband</u> audio effect filter."

This is not what is recited in claim 1, which instead requires a "distinct selectable delay time corresponding to a period of a <u>desired resonant frequency</u>." Indeed, nowhere does Levine teach, imply, consider, or even mention the words or concepts of "resonance" and "resonant frequency." The Examiner never responded to this argument.

Indeed Levine does not teach, imply, consider, or even mention the words or concepts of "resonance" and "resonant frequency in the flanger teaching because the sweeping delay modulation, moderate levels of resonant feedback, and general usage of a flanging operation is not applicable to, nor adjusted according to, a desired resonant frequency as required in the present claim.

A.5 Levine does not teach "distinct selectable delay time"

A further difference relates to the "distinct selectable delay time" feature of claim 1. Levine has no such teaching, but instead sets out the notion of providing delays for each subband that are identical (Levine col. 5 lines 30-60). For instance, Appellant assumes *arguendo* that Levine does teach a selectable delay time. Even if this "selectable" aspect of Levine was correct, such a system would provide delays having identical selectable delay times. If delay times are identical (such as they are in Levine) then they cannot therefore be "distinct" as called for in claim 1. Thus, the "distinct selectable delay time" feature of claim 1 is not taught or suggested by Levine.

The Examiner failed to comment on this distinction as well.

A.6 Okamura does not teach introducing distortion of the combined signal

Claim 1 further recites "after said combined signal reaches a predetermined threshold, distortion is introduced into said combined signal." The Examiner alleged that the distortion with equalizer effect (DIST+EQ) of Okamura discloses the identified feature. (Office Action of 5/12/08, pg. 4). The cited portion of Okamura is reproduced as follows:

> "As shown in FIGS. 24 and 25, only three kinds of sound effects containing a distortion-with-equalizer effect (represented by "DIST+EQ") and a delay effect (represented by "DELAY") can be selected for the sound effects EF3 and EF4 within the eleven kinds of sound effects preset to the effect program memory 22." (Okamura col. 22, lines 29-34) (emphasis added).

Appellant assumes *arguendo* that the DIST+EQ function of Okamura teaches the "distortion" feature of claim 1. Even if this were true, claim 1 is distinguishable since Okamura does not provide the requisite teaching as to the circumstances relating to introducing distortion (DIST+EQ) into the combined signal. More specifically, Okamura does not teach that distortion (DIST+EQ) is introduced into the combined signal "after said combined signal reaches a predetermined threshold," as required by claim 1.

The Examiner further failed to comment on this distinction.

Second,

The forgoing distinctions clearly demonstrate the differences between claim 1 and the cited Levine and Okamura patents. Appellant submits that it is clear error for the Examiner to maintain the rejection in view of such distinctions.

A.7 Examiner fails to identify support for the rejection

The third error for review relates to the Examiner's failure to comply with MPEP 707, which provides:

> "… When a reference is complex or shows or describes other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claims specified." MPEP 707, citing 37 CFR § 1.104(c)(2).

With regard to this error, Appellant notes that the Examiner does not specifically refer to the particular portion of Okamura which purportedly provides teachings relating to "after said combined signal reaches a predetermined threshold," as required by claim 1. (Office Action of 5/12/2008, pg. 4). Appellant sought clarification on this point in the Response of 1/15/2008. (Response of 1/15/2008, pg. 14). As expressed to the Examiner, Appellant has thoroughly reviewed the Okamura reference and is unable to find any discussion relating to the "after said combined signal reaches a predetermined threshold" feature. However, the Examiner declined to provide such assistance.

Appellant therefore submits that the rejection presented on page 4 of the Office Action of 5/12/2008 fails to comply with the forgoing requirements of MPEP 707, thus preventing Appellant a fair opportunity to address the rejection. Reversal of the stated rejection to claim 1 is believed proper and is respectfully requested.

A.8 Summary

Appellant submits that the foregoing supports reversal of the rejection to claim 1 based upon any of the identified errors. Independent claim 26 includes language similar to that of claim 1, and thus, the rejection to this claim is believed to include similar errors. The rejected dependent claims are believed to be patentable at least by virtue of their respective dependence on the patentable independent claims. Appellant therefore submits that the

identified rejections are improper and that the identified claims are allowable over the asserted references.

B. Dependent claims

Dependent claims 3, 5, 6, 10, 28, 30-31, and 35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Levine in view of Okamura, and further in view of Gerzon (5,555,306). These dependent claims are believed to be patentable at least by virtue of their respective dependencies on independent claims 1 and 26.

CONCLUSION

For the reasons presented herein, Appellant respectfully requests that the Board of Patent Appeals and Interferences reverse the decision rejecting the identified claims and direct the Examiner to pass the case to issue.

Respectfully submitted,

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CLAIMS APPENDIX

1. A system for enriching timbre of audio signals by adding swelling resonance, twang, or both, said system comprising:

an incoming audio signal; and

a plurality of audio signal delays, wherein each delay of said plurality of audio signal delays receive signal inputs comprising said incoming audio signal and a distinct high resonance positive feedback signal, and includes a distinct selectable delay time corresponding to a period of a desired resonant frequency, wherein each delay of said plurality of audio signal delays combine said received signal inputs resulting in a combined signal, and after said combined signal reaches a predetermined threshold, distortion is introduced into said combined signal, and wherein each delay of said plurality of audio signal delays generates an outgoing signal according to said selectable delay time, and wherein said outgoing signal comprises said combined signal and any distortion that has been introduced.

2. The system according to claim 1, wherein each outgoing signal generated by each delay of said plurality of audio signal delays is mixed by a mixer to produce at least one outgoing mixed audio signal.

3. The system according to claim 2, wherein said mixer separately provides low-speed auto-panning location modulation to each outgoing signal generated by each delay of said plurality of audio signal delays.

4. The system according to claim 1, wherein each outgoing signal generated by each delay of said plurality of audio signal delays is processed by a dedicated signal processor resulting in a corresponding plurality of processed signals, wherein said plurality of processed signals are mixed by a mixer to produce at least one outgoing mixed audio signal.

5. The system according to claim 4, wherein said mixer separately provides low-speed auto-panning location modulation to each outgoing signal generated by each delay of said plurality of audio signal delays.

6. The system according to claim 4, wherein said dedicated signal processor further includes an auto-panner swept at a rate corresponding to a sub-audio frequency.

7. The system according to claim 4, wherein said dedicated signal processor comprises a flanger swept at a rate corresponding to a sub-audio frequency.

8. The system according to claim 4, wherein said dedicated signal processor comprises a chorus swept at a rate corresponding to a sub-audio frequency.

9. The system according to claim 2, wherein said system provides one signal processing layer of a multi-layered signal processing system.

10. The system according to claim 2, wherein said system is incorporated into a spatially-distributed timbral realization system.

11. The system according to claim 1, wherein said selectable delay time for at least one delay of said plurality of audio signal delays is controlled by an incoming delay control signal.

12. The system according to claim 1, wherein said high resonance positive feedback signal of at least one delay of said plurality of audio signal delays is controlled by an incoming feedback control signal.

13. The system according to claim 2, wherein said mixer is controlled by an incoming mixer control signal.

14. The system according to claim 4, wherein said dedicated signal processor for at least one delay of said plurality of delays is controlled by an incoming signal processor control signal.

15. The system according to claim 1, wherein at least one of said plurality of delays is controlled in real-time by a measured attribute of said incoming audio signal.

16. The system according to claim 1, wherein said high resonance positive feedback signal of at least one delay of said plurality of audio signal delays is controlled in real-time by a measured attribute of said incoming audio signal.

17. The system according to claim 2, wherein said mixer is controlled in real-time by a measured attribute of said incoming audio signal.

18. The system according to claim 4, wherein said dedicated signal processor for at least one delay of said plurality of delays is controlled by a measured attribute of said incoming audio signal.

19. The system according to claim 4, wherein said dedicated signal processor for at least one delay of said plurality of delays comprises a chorus.

20. The system according to claim 4, wherein said dedicated signal processor for at least one delay of said plurality of delays comprises a flanger.

21. The system according to claim 4, wherein said dedicated signal processor for at least one delay of said plurality of delays comprises a chorus and a flanger.

22. The system according to claim 1, wherein at least one of said plurality of audio signal delays is controlled according to stored program control.

23. The system according to claim 2, wherein said mixer is controlled according to stored program control.

24. The system according to claim 4, wherein said dedicated signal processor for at least one delay of said plurality of delays is controlled according to stored program control.

25. The system according to claim 1, wherein said desired resonant frequency, for each of said plurality of audio signal delays, is determined by a selectable musical scale.

26. A method for enriching timbre of audio signals by adding swelling resonance, twang, or both, said method comprising:

receiving an incoming audio signal at each delay of a plurality of audio signal delays;

receiving a distinct high resonance positive feedback signal at each delay of said plurality of audio signal delays, wherein each individual delay of said plurality of audio signal delays includes a distinct selectable delay time corresponding to a period of a desired resonant frequency;

generating a combined signal for each delay of said plurality of audio signal delays by combining said incoming audio signal and said high resonance positive feedback signal associated with an individual delay of said plurality of audio signal delays, wherein said generating is performed for each delay of said plurality of audio signal delays to generate a corresponding plurality of combined signals;

introducing distortion into a particular combined signal of said plurality of combined signals after said particular combined signal reaches a predetermined threshold, wherein said introducing is performed for each delay of said plurality of audio signal delays; and

providing an outgoing signal from each delay of said plurality of audio signal delay according to said selectable delay time, wherein said outgoing signal comprises said combined signal and any distortion that has been introduced.

27. The method according to claim 26, wherein each outgoing signal generated by each delay of said plurality of audio signal delays is mixed by a mixer to produce at least one outgoing mixed audio signal.

28. The method according to claim 27, wherein said mixer separately provides low-speed auto-panning location modulation to each outgoing signal generated by each delay of said plurality of audio signal delays.

29. The method according to claim 26, wherein each outgoing signal generated by each delay of said plurality of audio signal delays is processed by a dedicated signal processor resulting in a corresponding plurality of processed signals, wherein said plurality of processed signals are mixed by a mixer to produce at least one outgoing mixed audio signal.

30. The method according to claim 29, wherein said mixer separately provides low-speed auto-panning location modulation to each outgoing signal generated by each delay of said plurality of audio signal delays.

31. The method according to claim 29, wherein said dedicated signal processor further includes an auto-panner swept at a rate corresponding to a sub-audio frequency.

32. The method according to claim 29, wherein said dedicated signal processor comprises a flanger swept at a rate corresponding to a sub-audio frequency.

33. The method according to claim 29, wherein said dedicated signal processor comprises a chorus swept at a rate corresponding to a sub-audio frequency.

34. The method according to claim 27, wherein said method is implemented within one signal processing layer of a multi-layered signal processing system.

35. The method according to claim 27, wherein said method is implemented within a spatially-distributed timbral realization system.

36. The method according to claim 26, wherein said selectable delay time for at least one delay of said plurality of audio signal delays is controlled by an incoming delay control signal.

37. The method according to claim 26, wherein said high resonance positive feedback signal of at least one delay of said plurality of audio signal delays is controlled by an incoming feedback control signal.

38. The method according to claim 27, wherein said mixer is controlled by an incoming mixer control signal.

39. The method according to claim 29, wherein said dedicated signal processor for at least one delay of said plurality of delays is controlled by an incoming signal processor control signal.

40. The method according to claim 26, wherein at least one of said plurality of delays is controlled in real-time by a measured attribute of said incoming audio signal.

41. The method according to claim 26, wherein said high resonance positive feedback signal of at least one delay of said plurality of audio signal delays is controlled in real-time by a measured attribute of said incoming audio signal.

42. The method according to claim 27, wherein said mixer is controlled in real-time by a measured attribute of said incoming audio signal.

43. The method according to claim 29, wherein said dedicated signal processor for at least one delay of said plurality of delays is controlled by a measured attribute of said incoming audio signal.

44. The method according to claim 29, wherein said dedicated signal processor for at least one delay of said plurality of delays comprises a chorus.

45. The method according to claim 29, wherein said dedicated signal processor for at least one delay of said plurality of delays comprises a flanger.

46. The method according to claim 29, wherein said dedicated signal processor for at least one delay of said plurality of delays comprises a chorus and a flanger.

47. The method according to claim 26, wherein at least one of said plurality of audio signal delays is controlled according to stored program control.

48. The method according to claim 27, wherein said mixer is controlled according to stored program control.

49. The method according to claim 29, wherein said dedicated signal processor for at least one delay of said plurality of delays is controlled according to stored program control.

50. The method according to claim 26, wherein said desired resonant frequency, for each of said plurality of audio signal delays, is determined by a selectable musical scale.

EVIDENCE APPENDIX

No evidence is being entered nor relied upon in this Appeal.

RELATED PROCEEDINGS APPENDIX

There has been no Board decision for any of the applications identified in the Related Appeals section of this Appeal Brief.